

Oak prairie preservation: a seed in time...

prioritizing and conserving native forb species

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Metro Regional Government serves over 1.5 million people in the greater Portland metropolitan area including Clackamas, Multnomah, and Washington counties. Metro manages over 17,000 acres of parks, trails, and natural areas. With over 450 ha of oak and prairie habitat under management, Metro is a leader in oak prairie conservation in the lower Willamette Valley.

This project targets conservation of uncommon forbs through four actions:

- 1) determination of target species
- 2) locating and documenting populations
- 3) gathering herbarium vouchers
- 4) collecting seed for banking

Determination of target species

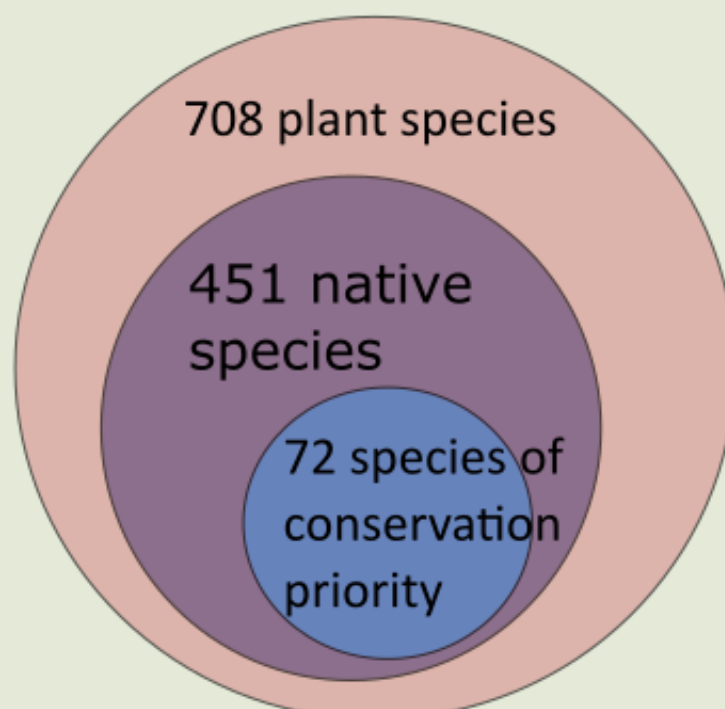
We compiled a master list of species known to occur within Metro sites containing oak habitats and developed a system for ranking based on conservation priority.

Ranking took into account

- 1) the species' fidelity to oak-prairie habitat¹
- 2) state and local rarity^{2,3,4}
- 3) expressed concern from regional ecologists⁵

The List

The master list consisted of 708 species, 451 of which are native. After ranking, 72 species were found to have high conservation concern.



These species are herbaceous annuals and perennials, most often with high fidelity to oak prairie habitats. Most are uncommon within the Portland metropolitan area. Three have a NatureServe rank of G2 (*Delphinium leucophaeum*, *Lathyrus holochlorus*, and *Sidalcea nelsoniana*) while the remaining species have a rank of G4 or G5. The 72 species have a total of 257 occurrences over the five Metro areas.

The project goal is to locate, voucher, and collect seed from at least 80% of the 257 known occurrences on Metro properties.

Locating and documenting populations

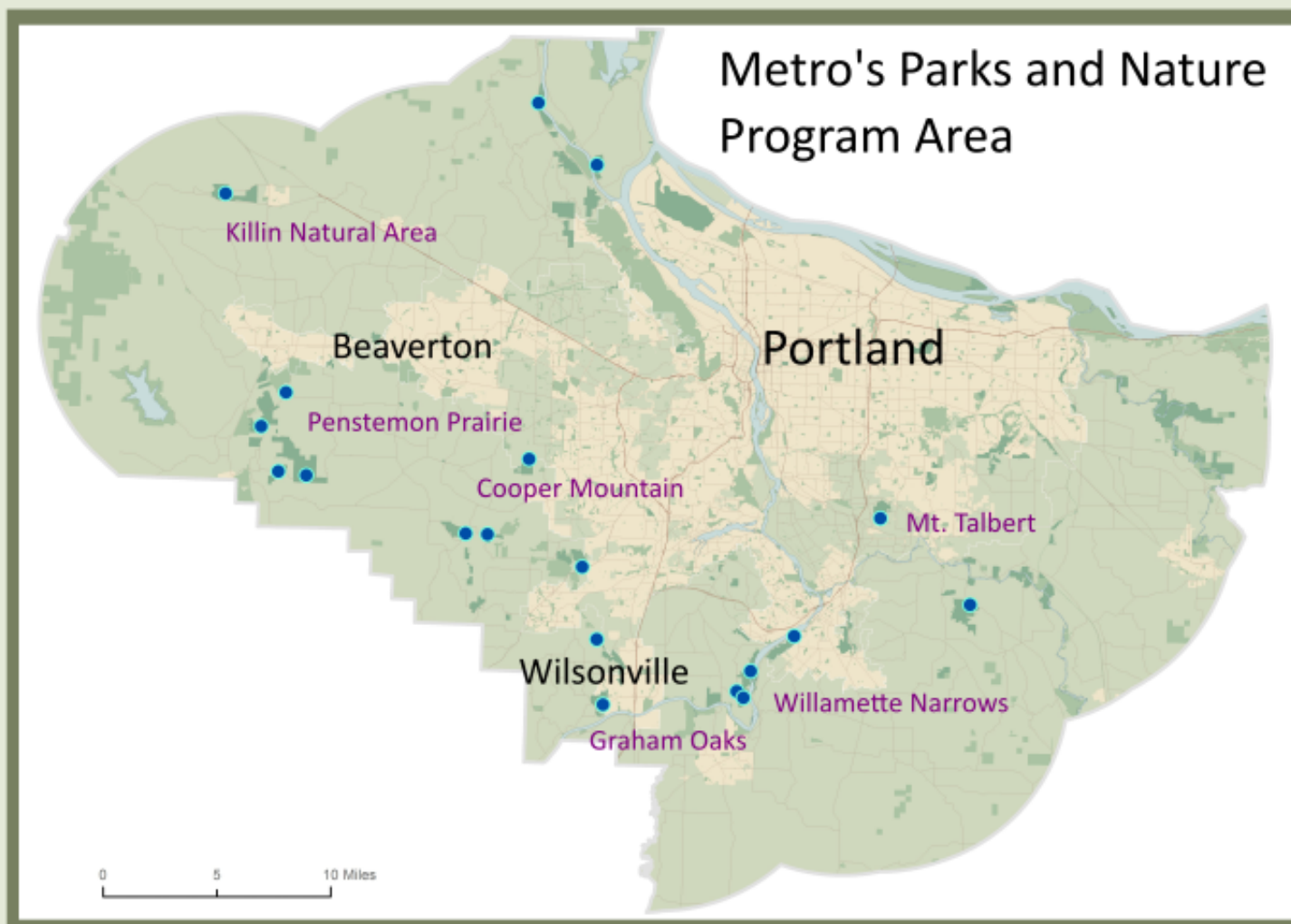
Scouting for populations occurs with staff and a dedicated force of trained volunteers. Baseline population data are collected including: location and extent of the population, census population numbers, rates of flowering or reproduction, and phenology.

Gathering herbarium vouchers

For each occurrence (a given species at a given site) vouchers are collected to represent that population. Vouchers are stored at the Portland State University Herbarium.

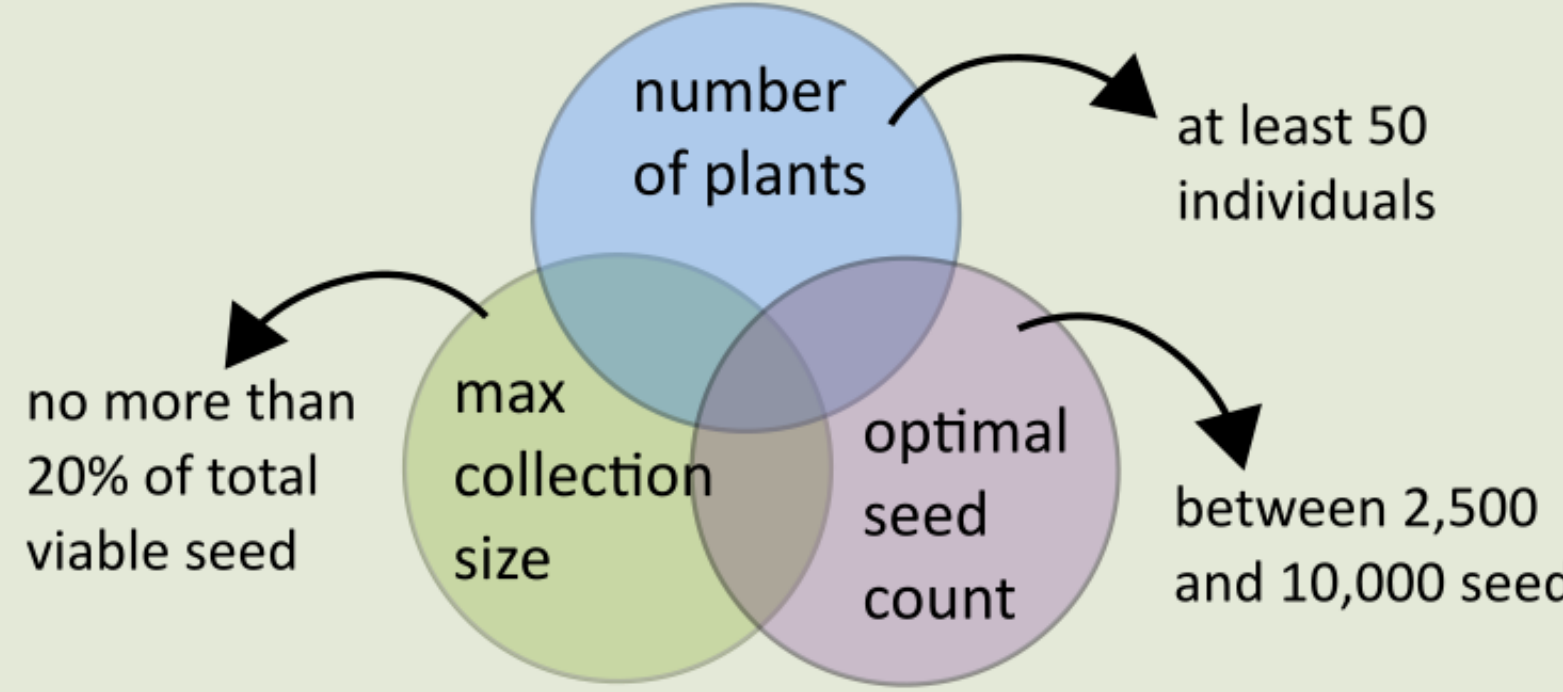


Oak Prairie Sites



Seed collection for storage in a seed bank

Seed are collected for long-term seed storage in a seed bank. We follow guidelines rooted in conservation science and designed to maintain genetic integrity of both the collection and source population. The protocol is determined on a species-by-species basis and integrates factors such as the minimum number of plants from which one should collect, the optimal number of seeds per collection, and the maximum percent of seed to collect.



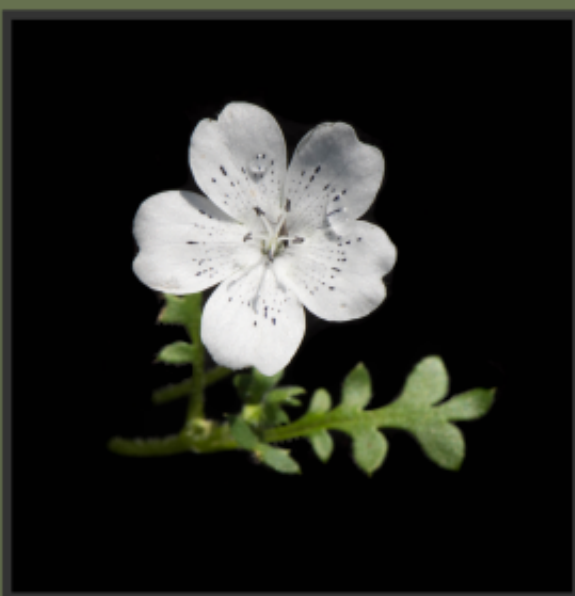
We collect from at least 50 individuals, strive to capture between 2,500 and 10,000 seed, and gather no more than 20% of the total viable seed. Seed will be stored at the Rae Selling Berry Seed Bank housed at Portland State University.

Target species and loctions

Family	Taxon	Common name	maternal lines?	total occurrences
Poaceae	<i>Achnatherum lemmonii</i>	Lemmon's needlegrass		3
Poaceae	<i>Agrostis hallii</i>	Hall's bentgrass		3
Amaryllidaceae	<i>Allium acuminatum</i>	taper tip onion	✓	3
Amaryllidaceae	<i>Allium amplexans</i>	narrowleaf wild onion		3
Apocynaceae	<i>Apocynum androsaemifolium</i>	spreading dogbane		3
Apocynaceae	<i>Apocynum cannabinum</i>	common dogbane		2
Asteraceae	<i>Balsamorhiza deltoidea</i>	deltoid balsamroot		2
Asparagaceae	<i>Brodiaea coronaria</i>	crown brodiaea		8
Asparagaceae	<i>Brodiaea elegans</i>	harvest brodiaea		6
Montiaceae	<i>Calandrinia ciliata</i>	red maids		2
Liliaceae	<i>Calochortus tolmiei</i>	Tolmie's cat's ear		6
Cyperaceae	<i>Carex inops</i>	long-stolon sedge		5
Cyperaceae	<i>Carex rossii</i>	Ross' sedge		3
Cyperaceae	<i>Carex tumulicola</i>	foothill sedge		9
Onagraceae	<i>Clarkia amoena</i>	farewell to spring		6
Onagraceae	<i>Clarkia gracilis</i>	slender clarkia		1
Onagraceae	<i>Clarkia purpurea</i> ssp. <i>viminea</i>	winecup godetia		4
Onagraceae	<i>Clarkia rhomboides</i>	rhomboid clarkia		1
Asteraceae	<i>Crepis atriobarba</i>	slender hawkbeard		1
Asteraceae	<i>Crocidium multicaule</i>	gold star		1
Boraginaceae	<i>Cryptantha intermedia</i>	common cryptantha		1
Boraginaceae	<i>Cynoglossum grande</i>	Pacific hound's tongue	✓	9
Poaceae	<i>Danthonia spicata</i>	poverty oatgrass		2
Apiaceae	<i>Daucus pusillus</i>	rattlesnake weed	✓	3
Ranunculaceae	<i>Delphinium leucophaeum</i>	white-rock bellflower		1
Primulaceae	<i>Dodecatheon hendersonii</i>	Henderson's shooting stars	✓	3
Onagraceae	<i>Epilobium torreyi</i>	narrow boisduvalia		3
Polygonaceae	<i>Eriogonum compositum</i>	heart-leaved buckwheat	✓	1
Poaceae	<i>Festuca idahoensis</i>	California fescue		1
Poaceae	<i>Festuca idahoensis</i> ssp. <i>roemerii</i>	Roemer's fescue		1
Liliaceae	<i>Fritillaria affinis</i>	chocolate lily	✓	6
Geraniaceae	<i>Geranium oregonum</i>	western geranium	✓	8
Asteraceae	<i>Gnaphalium integrifolia</i>	Willamette Valley gumweed		3
Campanulaceae	<i>Heterocodon rariflorum</i>	western pearlflower	✓	6
Asteraceae	<i>Heterotheca villosa</i> var. <i>villosa</i>	hairy false goldenaster		2
Poaceae	<i>Koeleria macrantha</i>	junegrass		2
Fabaceae	<i>Lathyrus holochlorus</i>	thin leaved pea	✓	2
Apiaceae	<i>Ligusticum apifolium</i>	celery leaved lovage		7
Saxifragaceae	<i>Lithophragma parviflorum</i>	smallflower woodland-star		6
Apiaceae	<i>Lomatium dissectum</i>	fernleaf lomatium	✓	5
Apiaceae	<i>Lomatium triternatum</i>	nineleaf bicuitroot	✓	2
Apiaceae	<i>Lomatium utricularum</i>	spring gold		4
Poaceae	<i>Melica geyeri</i>	Geyer's oniongrass		5
Poaceae	<i>Melica harfordii</i>	Harford's melic		2
Poaceae	<i>Melica subulata</i>	Alaska oniongrass		9
Saxifragaceae	<i>Micranthes integrifolia</i>	common western saxifrage		5
Saxifragaceae	<i>Micranthes oregana</i>	Oregon saxifrage		3
Saxifragaceae	<i>Micranthes rufidula</i>	rusty haired saxifrage		1
Polemoniaceae	<i>Microrhiza gracilis</i>	graceful phlox	✓	2
Polemoniaceae	<i>Navaretia intertexta</i>	needleleaf navaretia		6
Polemoniaceae	<i>Navaretia squarrosa</i>	skunkweed		1
Boraginaceae	<i>Nemophila menziesii</i> var. <i>atomaria</i>	baby blue-eyes		5
Orobanchaceae	<i>Orobancha fasciculata</i>	clustered broomrape		2
Orobanchaceae	<i>Orobancha uniflora</i>	one flowered broomrape		2
Plantaginaceae	<i>Penstemon rydbergii</i> var. <i>oreocharis</i>	Rydberg's penstemon		2
Plantaginaceae	<i>Penstemon serrulatus</i>	Cascade penstemon		2
Apiaceae	<i>Perideridia oregana</i>	Oregon yampah		6
Apiaceae	<i>Perideridia gairdneri</i>	common yampah		3
Rosaceae	<i>Potentilla gracilis</i>	graceful cinquefoil		3
Rosaceae	<i>Sanguisorba occidentalis</i>	western burnett		3
Apiaceae	<i>Sanicula bipinnatifida</i>	purple sanicle		4
Apiaceae	<i>Sanicula crassicaulis</i>	Pacific sanicle		12
Saxifragaceae	<i>Saxifraga mertensiana</i>	Mertens' saxifrage		1
Crassulaceae	<i>Sedum lanceolatum</i>	lanceleaf stonecrop		4
Malvaceae	<i>Sidalcea campestris</i>	meadow checkermallow		8
Malvaceae	<i>Sidalcea nelsoniana</i>	Nelson's checkermallow		5
Caryophyllaceae	<i>Silene douglasii</i>	Douglas' catchfly		0
Rosaceae	<i>Spiraea betulifolia</i>	white spiraea		4
Asteraceae	<i>Symphotrichum hallii</i>	Hall's aster	✓	2
Lamiaceae	<i>Trichostema lanceolatum</i>	vinegar weed		2
Fabaceae	<i>Trifolium bifidum</i>	notchleaf clover		3
Fabaceae	<i>Trifolium oliganthum</i>	few flowered clover		2
Fabaceae	<i>Trifolium willdenovii</i>	tomcat clover		4
Violaceae	<i>Viola praemorsa</i>	upland yellow violet	✓	5

Progress and Future

After one field season, we have collected 37% and 22% of our targets for vouchers and seed, respectively. We expect to meet our goal with two more seasons of field work. But, this project will remain ongoing. We find more populations every year. Furthermore, we are investigating appropriate ways to make these data accessible to the larger conservation community, such as sharing our data with Oregon Flora Project. By partnering with regional institutions, we aim to expand scientific understanding of this threatened habitat and inform further conservation efforts.



Sources:

- 1) Ed Alverson's list of high-fidelity oak species
- 2) Oregon Biodiversity Information Center
- 3) NatureServe
- 4) Christy et al., Urbanizing Flora of Portland, Oregon, 1806-2008, Native Plant Society of Oregon, 2009
- 5) Five ecologists inside and outside of Metro were asked to weigh in on the species they thought most in need of conservation.

photo credits: Ken Matley and Francois Raynal